VII. "On the Effects produced on the Circulation and Respiration by Gunshot Injuries of the Cerebral Hemispheres." By S. P. KRAMER, M.D., and VICTOR HORSLEY, M.B., F.R.C.S., F.R.S., Professor of Pathology in University College, London. Received February 21, 1894.

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(Abstract.)

In consequence of the fact that the effects produced on the circulation and respiration by a bullet passing through the cerebral hemispheres are but little understood, the authors instituted a series of pathological experiments on etherised dogs, and of physical experiments on various substances.

The results obtained establish, beyond question, that the primary cause of death under these circumstances is not, as is usually supposed, due to failure of the heart, but to arrest of the respiratory movements. Further, the authors have found, in confirmation of this, that death can be prevented by the employment of artificial respiration, except under certain circumstances detailed in the paper.

After describing the changes in the circulation produced, and which consist of (*a*) slight initial fall of blood pressure, (*b*) considerable later rise of blood pressure, (*c*) preservation of the rhythm of the heart, the authors discuss the physical effects of the projectile on the encephalic contents, and they show, as was originally contended by Professor Kocher, that the action of the bullet is essentially a hydrodynamic one, and that it is the lateral pressures which cause mechanical lesion of the respiratory centre.

In this respect the results obtained further support the original observations of Spencer and Horsley, recently confirmed by Hill, viz., that the respiratory centre is the first to be seriously affected by changes in the intra-cranial tension.

Finally the authors point out that, supervening on the primary arrest of respiration, there ensues a gradual rise in the intra-cranial tension due to the hæmorrhage within the skull cavity, and that the phenomena which then follow are the same as those described in the above-mentioned paper.